

SYLVANIA

ECG705A

ECG707

ECG713

LINEAR INTEGRATED CIRCUIT COLOR TV CHROMA DEMODULATOR

FEATURES

- LOW OUTPUT VOLTAGE DRIFT WITH TEMPERATURE
- DOUBLY BALANCED DEMODULATION
- INTERNAL COLOR-DIFFERENCE MATRIX FOR NTSC COLOR TV
- 10 VOLT PEAK-TO-PEAK $E_B - E_Y$ OUTPUT

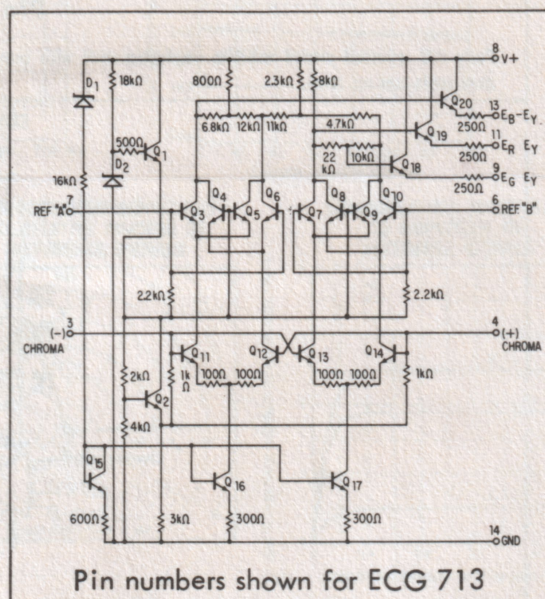
DESCRIPTION

Color TV chroma demodulator constructed on a single silicon chip. These devices demodulate the chroma subcarrier information contained in a color television video signal and provides color-difference signals at the outputs. The low voltage drift of the DC output insures excellent performance in direct-coupled chrominance output circuitry.

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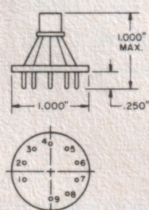
EQUIVALENT CIRCUIT



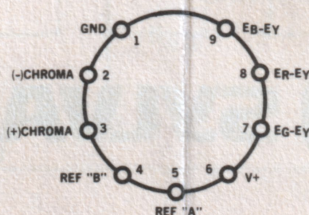
ABSOLUTE MAXIMUM RATINGS

Supply Voltage	+28V
Minimum Load Resistance	3 k Ω
Peak-to-Peak Reference Input Voltage	5.0V
Peak-to-Peak Chroma Input Voltage	5.0V
Internal Power Dissipation	450mW
Operating Temperature Range	0°C to +70°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (soldering, 10 seconds)	+300°C

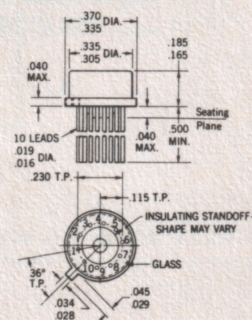
ECG705A



TOP VIEW



ECG707



ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, $V^+ = 24\text{ V}$, Test Circuit 1 unless otherwise specified)

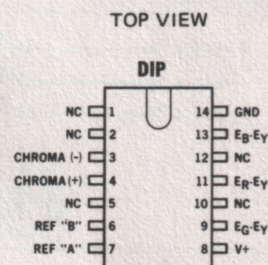
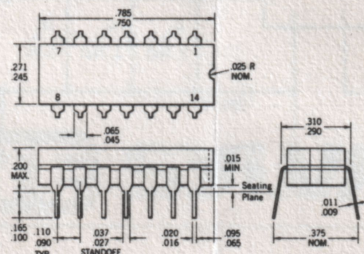
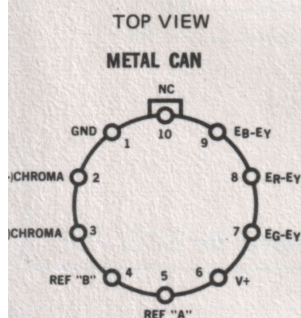
PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Supply Current	$e_C = 0, R_L = 1 \text{ M}\Omega$	5.5	9.0	12.5	mA
	$e_C = 0, R_L = 1 \text{ M}\Omega, T_A = 70^\circ\text{C}$		9.0	13.0	mA
	$e_C = 0$	16.5	22	25.5	mA
	$e_C = 0, T_A = 70^\circ\text{C}$		22		mA
Internal Power Dissipation	$e_C = 0$		340	430	mW
	$e_C = 0, T_A = 70^\circ\text{C}$		340	445	mW
DC Voltage at any Output Terminal	$e_C = 0$	13.2	14.5	15.8	Volts
	$e_C = 0, T_A = 70^\circ\text{C}$	13.0	14.5	16.0	Volts
Temperature Coefficient of DC Voltage at any Output Terminal	$e_C = 0$	-5.0	-0.3	+5.0	mV/°C
Absolute Value of DC Difference Voltage between any Two Outputs	$e_C = 0$		0.15	0.6	Volts
DC Voltage at either Reference Terminal	$e_A = e_B = e_C = 0$		5.8		Volts
DC Voltage at either Chroma Terminal	$e_C = 0$		3.2		Volts
Reference Input Resistance	$e_C = 0$		1.7		k Ω
Reference Input Capacitance	$e_C = 0$		6.0		pF
Chroma Input Resistance			0.8		k Ω
Chroma Input Capacitance			5.0		pF
Peak-to-Peak Chroma Input Voltage	$E_B - E_Y = 5 \text{ Vp-p}$		0.4	0.7	Volts
Peak-to-Peak $E_R - E_Y$ Output Voltage	$E_B - E_Y = 5 \text{ Vp-p}$	3.5	3.8	4.2	Volts
Peak-to-Peak $E_G - E_Y$ Output Voltage	$E_B - E_Y = 5 \text{ Vp-p}$	0.75	1.0	1.25	Volts
Maximum Peak-to-Peak $E_B - E_Y$ Output Voltage	$e_C = 1.5 \text{ Vp-p}$	8.0	10		Volts
$E_B - E_Y$ Demodulation Angle	$E_B - E_Y = 5 \text{ Vp-p}$		3		Degrees
$E_R - E_Y$ Demodulation Angle	$E_B - E_Y = 5 \text{ Vp-p}$		109		Degrees
$E_G - E_Y$ Demodulation Angle	$E_B - E_Y = 5 \text{ Vp-p}$		259		Degrees
$E_R - E_Y$ Demodulation Angle relative to $E_B - E_Y$ Demodulation Angle	$E_B - E_Y = 5 \text{ Vp-p}$	101	106	111	Degrees
$E_B - E_Y$ Demodulation Angle relative to $E_G - E_Y$ Demodulation Angle	$E_B - E_Y = 5 \text{ Vp-p}$	96	104	112	Degrees
Highest Peak-to-Peak Demodulator AC Unbalance Voltage at any Output Terminal	$e_C = 0$		0.3	0.8	Volts

DEFINITIONS

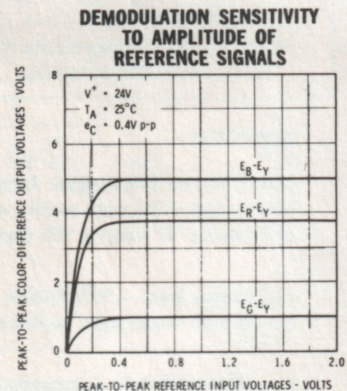
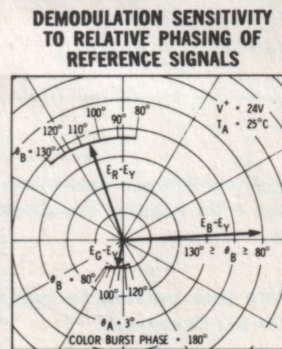
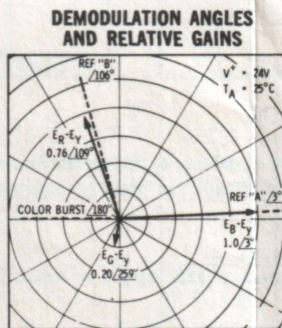
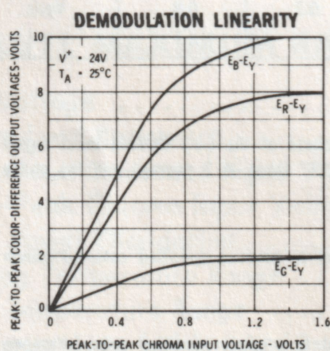
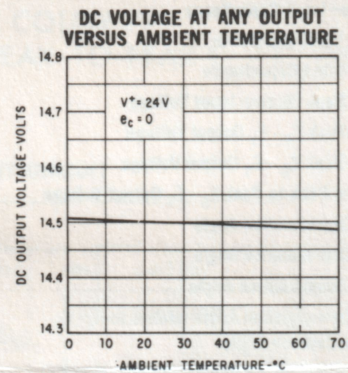
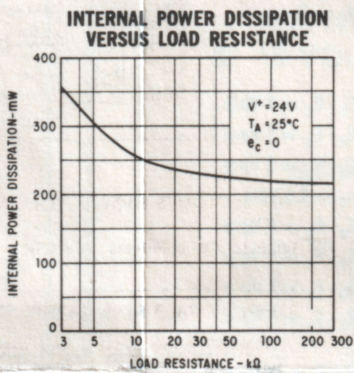
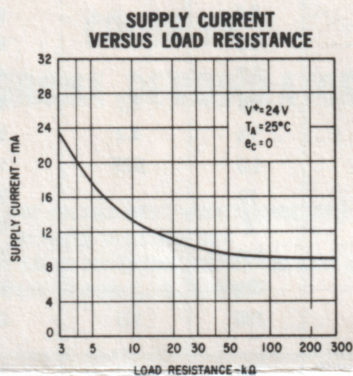
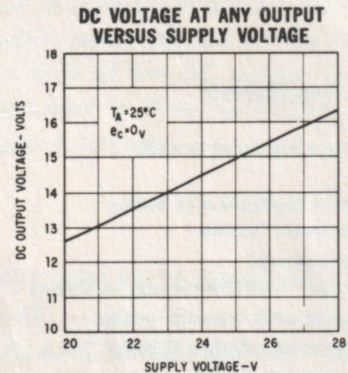
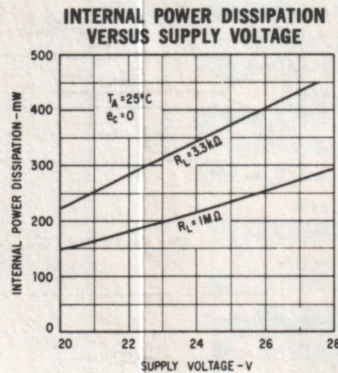
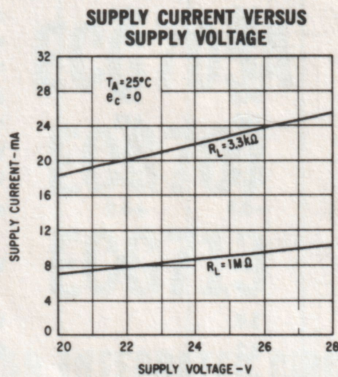
Color-Difference Demodulation Angle — A color-difference demodulation angle is defined as the instantaneous phase of the (+) Chroma input signal which produces the most positive voltage at the respective color-difference output with the phase of Reference "A" taken at 3 degrees and the phase of Reference "B" taken at 106 degrees.

(+) Chroma Input — A composite chroma signal containing the burst at a phase of 180 degrees is demodulated to produce specified color-difference demodulation angles when applied to the (+) Chroma input.

(-) Chroma Input — A composite chroma signal containing the burst at a phase of 0 degrees is demodulated to produce specified color-difference demodulation angles when applied to the (-) Chroma input.

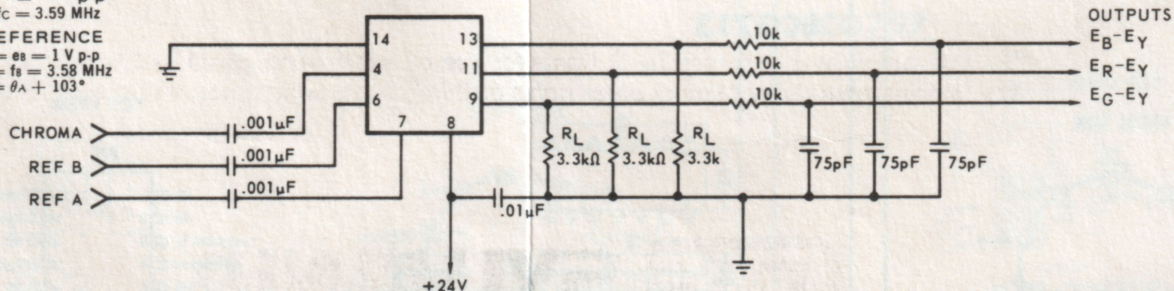


TYPICAL ELECTRICAL CHARACTERISTICS
(TEST CIRCUIT 1 UNLESS OTHERWISE SPECIFIED)



INPUTS
CHROMA:
 $e_c \leq 1.5 \text{ V p-p}$
 $f_c = 3.59 \text{ MHz}$
REFERENCE
 $e_A = e_B = 1 \text{ V p-p}$
 $f_A = f_B = 3.58 \text{ MHz}$
 $\theta_B = \theta_A + 103^\circ$

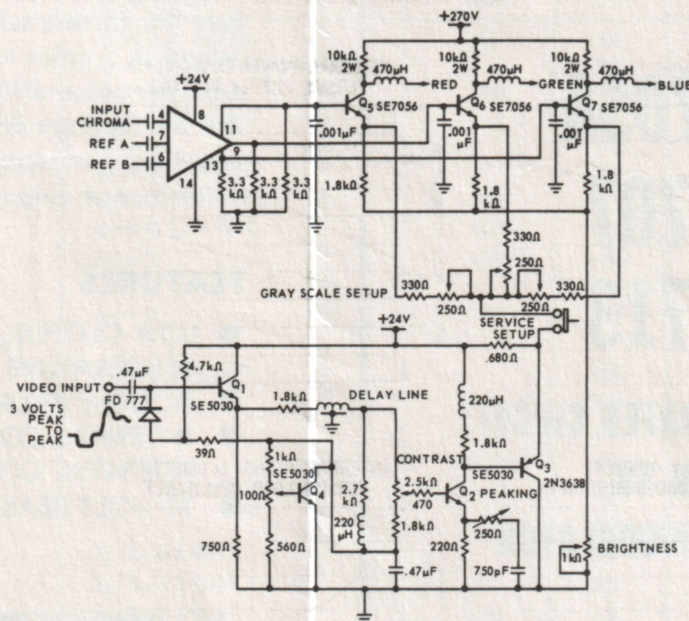
TEST CIRCUIT 1



Pin numbers shown for ECG 713

TYPICAL APPLICATION

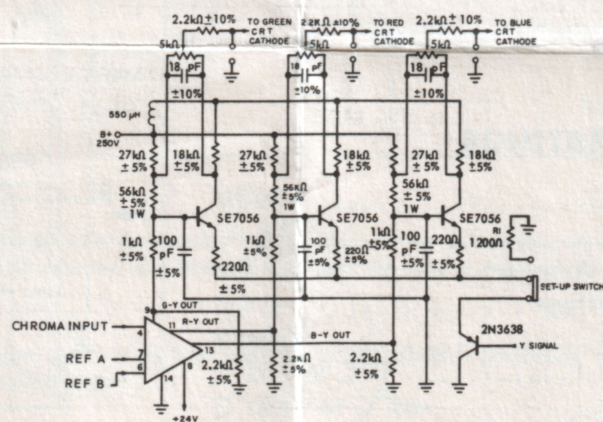
COMPLETE R-G-B VIDEO OUTPUT STAGE



Pin numbers shown for ECG 713

Fully D.C. coupled circuit exhibits negligible drift with temperature, eliminates interaction between contrast and brightness controls, and minimizes gray-scale set-up time.

COMPLETE R-G-B VIDEO OUTPUT STAGE



Pin numbers shown for ECG 713

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